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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,274	01/04/2006	Teruhiro Shiono	10873.1778USWO	6393
53148	7590	01/25/2011		
HAMRE, SCHUMANN, MUELLER & LARSON P.C.			EXAMINER	
P.O. BOX 2902			CHU, KIM KWOK	
MINNEAPOLIS, MN 55402-0902			ART UNIT	PAPER NUMBER
			2627	
			MAIL DATE	DELIVERY MODE
			01/25/2011	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,274	<b>Applicant(s)</b> SHIONO ET AL.
	<b>Examiner</b> Kim-Kwok CHU	<b>Art Unit</b> 2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on Amendment filed on 12/1/2010.  
 2a) This action is **FINAL**.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-3,10-19 and 21-40 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 24-40 is/are allowed.  
 6) Claim(s) 1-3,10,14,16,18 and 19 is/are rejected.  
 7) Claim(s) 11-13,15,17 and 21-23 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 27 January 2009 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

2. Claims 1-3, 10, 13, 14, 16, 18 and 19 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Aoyama et al. (U.S. Application 2005/0058028) in view of Sugaya et al. (U.S. Patent 5,602,825).

Aoyama teaches an optical information reproduction device (Fig. 23) very similar to that of the present invention. For example, Aoyama teaches the following:

Regarding Claim 1, the optical information reproduction device (Fig. 23) comprising: an information recording medium (Fig. 4) that includes a recording unit (recording layer in two levels) having a multilayer structure of recording layers (Fig. 4; land and groove are two different recording layers/levels) capable of recording information three-dimensionally (Figs. 4; pits pp are three-dimensional) and from which can be reproduced

Art Unit: 2627

information recorded on one of the recording layers through any of the other recording layer or layers (Fig. 4; recording layers can be selected/read through from the multiple layers) and provided with a track (Fig. 5) having a specific track pitch (Fig. 6), with which information is recorded by forming a plurality of recording marks (pits) along the track of the recording unit by a mark length recording method (Fig. 6; pits pp have length to represent data), and when the track direction of the recording marks is assumed to be their longitudinal direction and the direction perpendicular to the track direction is assumed to be their lateral direction (Fig. 6), for recording marks located substantially in the same plane (Fig. 6), the total area of elongated recording marks pp, whose longitudinal length is greater than their lateral length (Fig. 6), is greater than the total area of recording marks having other than elongated shapes (Fig. 6; elongated data marks cover more medium area than other non-data area); a first semiconductor laser light source LD (Fig. 23) for emitting reproduction light having a wavelength  $\lambda_1$ ; an objective lens 16 (Fig. 23) for focusing the reproduction light emitted from the first semiconductor laser light source LD on the recording unit (recording layers) of the information recording medium 17 (Fig. 23); and a first photodetector 28 (Fig. 23) for detecting a reproduction signal

Art Unit: 2627

from the reflected light from the recording unit, wherein the information recording medium 17 has a track pitch and a wavelength  $\lambda_1$  of the reproduction light (Fig. 7), the first semiconductor laser light source LD (Fig. 23) has a characteristic such that it emits the reproduction light in which an amplitude of a polarized light component (main light beam in vertical direction above the track) that is polarized perpendicular to the track direction is greater than that of the other polarized light component (section 103 lines 1-3).

However, Aoyama does not disclose that the track pitch can not be more than 1.3 times the wavelength of the reproduction light.

Sugaya teaches an information recording medium having a track pitch which is less than 1.3 times the wavelength of the reproduction light (Fig. 3; abstract).

Aoyama teaches an optical medium having a track pitch of 1.6 um which is larger than the required claimed track pitch of about 1 um (1.3 times 780 nm). When there is a benefit of increasing a recording capacity of the optical medium, it would have been obvious to one ordinary skill in the art to adapt Sugaya's track pitch in Aoyama's medium, because Sugaya's track pitch can store more information in the same CD by increase the data stored density.

Art Unit: 2627

Regarding Claim 2, Aoyama further teaches that the reproduction light focused on the recording unit (recording layers) is linearly polarized light that is polarized perpendicular to the track direction of the information recording medium (section 103 lines 1-3; laser source LD generates liner polarized light beams so that beamsplitter 11, 19 can separate returned light beams into different paths).

Regarding Claim 3, Aoyama further teaches that the reproduction light focused on the recording unit is elliptically polarized light whose main component is a polarized light component that is polarized perpendicular (Fig. 23; the light beam is not a perfect circular polarized light beam).

Regarding Claim 10, Aoyama further teaches that the first light source LD (Fig. 23) further emits recording light with a wavelength of  $\lambda_2$  (laser emits a light with a wavelength range from  $\lambda_1$  to  $\lambda_2$ ), the objective lens 16 (Fig. 23) focuses the recording light on a recording unit included in the recording unit, and the recording light focused on the recording unit (recording layers) includes as its main component a polarized light component that is polarized perpendicular to the track direction of the information recording medium (section 103 lines 1-3).

Art Unit: 2627

Regarding Claim 13, Aoyama further teaches that the first semiconductor light source LD (Fig. 23) further emits recording light with a wavelength of  $\lambda_2$ , the wavelength  $\lambda_1$  of the reproduction light is shorter than the wavelength  $\lambda_2$  of the recording light (Fig. 23; laser emits a light with a wavelength range from  $\lambda_1$  to  $\lambda_2$ ).

Regarding Claim 14, Aoyama further teaches that the first light source LD further emits recording light with a wavelength of  $\lambda_2$  (laser emits a light with a wavelength range from  $\lambda_1$  to  $\lambda_2$ ), the recording light is pulsed light (laser light is driven by pulse and therefore its generated beam is a pulse light), and information is recorded by using nonlinear absorption (recording medium has a nonlinear recording layer which discriminates light wavelengths).

Regarding Claim 16, Aoyama further teaches that a surface area of a light-receiving component (Fig. 3; recording layers) provided in the first photodetector is set to (being focused on) an area over which light conveying (read/write) target information included in the reflected light is received (Fig. 5).

Regarding Claim 18, Aoyama further teaches that the recording marks are voids (Fig. 6).

Art Unit: 2627

Regarding Claim 19, Aoyama further teaches that the recording marks are recording pits produced by refractive index changes (Fig. 6; pits are formed by refractive index changes as a result of thermal deformation of the layers of the recording medium).

**Allowable Subject Matter**

3. Claims 24-40 are allowable over prior art.

4. Claims 11-13, 15, 17 and 21-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claim 15, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

a pinhole plate that is disposed along the optical path between the information recording medium and the first photodetector, and has a pinhole that transmits light conveying target information included in the reflected light.

Art Unit: 2627

As in claim 21, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

the optical information reproduction device further comprising a second semiconductor laser light source for emitting recording light with a wavelength of  $\lambda_2$  Wherein the objective lens focuses the recording light on the recording unit included in the information recording medium, and the second semiconductor laser light source has a characteristic such that it emits the recording light in which an amplitude of a polarized light component that is polarized perpendicular to the track direction is greater than that of other polarized light components.

As in claim 22, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

The objective lens focuses the recording light on the recording unit included in the information recording medium, and comprising an optical component that functions so as to switch the state of polarization of the recording light emitted from the first semiconductor laser light source, whereby the amplitude of a polarized light component of the recording light that is polarized perpendicular to the track direction is caused

Art Unit: 2627

to be greater than that of other polarized light components.

As in claim 24, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

An optical component is provided along the optical path between the second semiconductor laser light source and the objective lens so as to convert the state of polarization of the recording light emitted from the second semiconductor laser light source, whereby the amplitude of a polarized light component of the recording light that is polarized perpendicular to the track direction is caused to be greater than that of the other polarized light components compared with the state of polarization before the conversion.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

***Response to Remarks***

6. Applicant's Remarks filed on December 1, 2010 have been fully considered but they are not persuasive. First, Applicant points out that the prior art of Aoyama (U.S. Application 2005/0058028) does not teach a multilayer structure of recording layers (page 13 of Remarks, last paragraph). Regarding to the layer structure, Aoyama teaches a multilayer recording medium (Figs. 3 and 4). Regarding the recording layers, Aoyama teaches a recording medium having two horizontal layers/levels (land and groove) for recording information. Since the horizontal land layer/level and groove layer/level are different in heights, their recorded information are in form of three dimensionally as required in Applicant's Claim 1 and 24.

Furthermore, Applicant does not agree that the secondary reference (U.S. Patent 5,602,825) of Sugaya's track pitch (less than 1.3 times the wavelength) can be applied to Aoyama's optical information reproduction device (page 14 of the Remarks, second paragraph). First, the range of track pitch can be changed based on the component of an optical information device. For example, a CD, a DVD or a BD have different track pitch. Although Aoyama uses a laser light with a wavelength that is not suitable for Sugaya's track pitch, but it would have been obvious that Aoyama can replace the laser light so that the

Art Unit: 2627

relationship of its new track pitch and its wavelength of the new laser light can be satisfied.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2627

8. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen, can be reached on (571) 272-7579.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

/Kim-Kwok CHU/

Examiner AU2627  
January 19, 2011  
(571) 272-7585

/HOA T NGUYEN/

Supervisory Patent Examiner, Art Unit 2627